

DEGRADED RIPARIAN HABITAT AT CHARTERS TOWERS AND ITS POTENTIAL TO DECREASE LOCAL DIVERSITY AND/OR CAUSE EXTINCTIONS. *Memoirs of the Queensland Museum* 38(2): 446, 1995.—The importance of riparian zones as natural wildlife corridors, as refuges during dry seasons and as centres of increased species diversity and abundance has been well documented (Redford & de Funesca, 1986; Bennett, 1990; Williams, 1994). In northern Australia, riparian zones form narrow corridors of mesic streamside habitat extending into drier inland woodlands (Williams, 1994), and allow species otherwise unable to survive in arid and semi-arid habitat (e.g. aquatic, semi-aquatic, coastal and wetter forest species, migratory species) to expand into these areas (Land Conservation Council, 1987). Features of riparian vegetation that contribute to the observed high diversity and abundance of fauna include its floristic and structural diversity and hence, the higher availability of resources (Bennett, 1990; Williams, 1994). Riparian habitats are therefore important sites for local and regional species conservation. If riparian habitat is degraded or altered, there is a potential for a decrease in species diversity and abundance, and possibly for short and long term species extinctions.

A short terrestrial flora and fauna survey of riparian habitat was conducted in June 1994 on the Burdekin River near the Charters Towers Weir by the Australian Centre for Tropical Freshwater Research, James Cook University of North Queensland. The study area comprised the river impoundment and riparian zone to the high levee bank, to a point 8 km upstream of the current weir. Vertebrate fauna was surveyed using a combination of Elliott and cage trapping, spotlighting, active searching and bird census. Vegetation was surveyed by foot traverse. Secondary sources for flora and fauna records were also examined. A total of 88 bird, 12 mammal (four introduced), seven reptile and one introduced amphibian species were recorded during the present survey. Additional sources (Queensland Museum records; White, unpubl. data) list a further four native mammals, six reptiles and four bird species. A total of 99 vascular plants were recorded, 35% of which were exotic. Three major vegetation communities were identified: *Melaleuca leucadendra*, *M. argentea* and *M. viminialis* river bed and bank community, tall (up to 25 m) closed to open *Eucalyptus tereticornis* woodland on the first levee bank; tall to medium open mixed species woodland (*E. tessellaris*, *E. erythrophloia*, *E. papuana*, *E. dolichocarpa*, *E. drepanophylla*) on the highest levee bank.

Exotic species dominated the understorey in all vegetation types surveyed. Of particular concern is infestation of Rubber Vine *Cryptostegia grandiflora*, which threatens the long-term viability of the two woodland communities. Open canopy observed in the *E. tereticornis* community is an artefact of this exotic species reaching the canopy and killing mature trees. Recruitment of trees in the mid and understorey was evident, but these were also being smothered. Extensive grazing of cattle along the river bank has also degraded the native vegetation in the riparian zone. As a result, ground cover has been substantially reduced (in some cases 15–20%), exotic invasion enhanced, soil erosion increased and recruitment of native species decreased.

Though the bird community was diverse and species rich, 24% of these were waterbirds, present in high numbers due to the impoundment. Excluding waterbirds, 47% of all species recorded were 'uncommon' (<5 observed). A number of typical riparian and woodland species that forage in the shrub and ground layers were observed to be of reduced abundance

or absent (e.g. acanthizids, sylviids, muscicapids, cuculids, malurids). Medium to large macropods (6 spp.) and feral species (4 spp.) were the dominant element of the terrestrial fauna. No small ground-dwelling mammals were recorded either by live trapping or by secondary sources. This is a typical pattern throughout arid and semi-arid Queensland (Van Dyck, 1991), though confirmation of the total absence of small terrestrial fauna in the study area requires further survey. Both observed patterns are a reflection of extremely poor condition and quality of the ground and shrub flora, and overall vegetation community structure. Exotic weed invasions, excessive grazing, unrestricted bank access by cattle and river bank erosion have all combined to create a riparian habitat that is degraded and unlikely to act as a refuge for fauna or as a centre of increased biotic diversity and abundance. Two large vertebrate species recorded have the potential to become extinct in the study area within the near future. A nesting pair of White-bellied Sea-eagles and a Greater Glider *Petaurides volans* were recorded in the Queensland Blue Gum *E. tereticornis* woodland. As outlined above, this community is heavily infested with Rubber Vine, and has already regressed from a closed woodland to an open woodland as a result of the loss of mature trees. Loss of the dominant overstorey would result in the loss of nesting, denning and breeding resources for these two species. Therefore the conservation status of these two species in the local area is considered to be 'endangered'—species at serious risk of disappearing from the wild state within 10–20 years if present land use and other causal factors continue to operate (Ingram & Raven, 1991).

A number of limitations may have influenced many of the patterns observed including a relatively short survey, season and prevailing drought conditions. Riparian areas are important sites for local and regional species diversity and conservation, especially in sub-optimal conditions, and degradation within such zones creates the potential for a reduction in biodiversity and local species extinctions. Degraded riparian habitat and vegetation such as this is prevalent throughout the Burdekin-Haughton catchment and the careful management and rehabilitation of these zones should be a priority for conservation within this region.

Literature Cited

- Bennett, A.F. 1990. Habitat corridors. Their role in wildlife management and conservation. Arthur Rylah Institute for Environmental Research, Department of Conservation and Environment, Victoria.
- Ingram, G.J., & Raven, R.J. (eds) 1991. An atlas of Queensland's frogs, reptiles, birds and mammals. (Queensland Museum: Brisbane).
- Land Conservation Council. 1987. Report on the Mallee area review. LCC, Melbourne, Victoria.
- Redford, K. & de Funesca, G. 1986. The role of gallery forests in the zoogeography of the Cerrado's non-volant mammals fauna. *Biotropica*, 18:126–135.
- Van Dyck, S., M. 1991. The status of mammals. 349–353. In: Ingram, G.J., & Raven, R.J. (eds), An atlas of Queensland's frogs, reptiles, birds and mammals. (Queensland Museum: Brisbane).
- Williams, S. 1994. The importance of riparian habitats to vertebrate assemblages in North Queensland woodlands. *Memoirs of the Queensland Museum*, 35(1): 248.
- Alex Kurt & Steve Skull, Australian Centre for Tropical Freshwater Research, James Cook University, Townsville, Queensland, 4811, Australia; (10 June 1995).